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ABSTRACT

This study of a parent education program associated with a medical facility investigated two questions: (1) Was the medical facility a valid site for recruiting and training parents for an educational intervention program to be carried out at home? (2) Would a short term intervention program have an impact on the performance of preschool children from low income backgrounds? Aimed at Hispanic and Black parents of children aged 20-39 months, the program was instituted in 2 sites: a well baby clinic in a university hospital and a community child health station, a unit of the New York City Department of Health. The program was conducted in 12 sessions bi-monthly by bilingual playroom assistants in the pediatric clinic playroom. Parents were taught (in individual sessions) to use educational toys with their children. Children (n = 518) were matched on age, sex and ethnicity and randomly assigned to an early or late treatment group. Pre- and post-tests of intelligence were conducted. Children in the treated early group showed a significant gain in performance in comparison with the untreated late group. A subsequent comparison of pre- and post-training IQ scores for children from both groups showed that their performance improved significantly as a result of training. No ethnic differences were found in the Program Completed Sample (n = 147). While many questions about the appropriate use of medical facilities for educational interventions remained unanswered, the program did have a positive impact on the performance of low income preschool children. The program was seen to encourage mothers to include teaching as a part of caregiving. (Author/RH)

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A DESCRIPTION AND EVALUATION OF AN EDUCATIONAL INTERVENTION PROGRAM IN A PEDIATRIC CLINIC

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Abstract

Morris, Anne G. and Glick, Joseph. A description and evaluation of an educational intervention program in a pediatric clinic.

This study investigated two questions: (1) Was the medical facility a valid site for recruiting and training parents for an educational intervention program to be carried out at home? (2) Would a short term intervention program have an impact on the performance of preschool children from low income backgrounds?

A parent education program aimed at Hispanic and Black parents of children ages 20-39 months was instituted in a well baby clinic in a university hospital and a child health station in the community. The 12 session cognitively oriented and age-graded curriculum was transmitted bi-monthly by bilingual playroom assistants in the pediatric clinic playroom. In individual sessions parents learned to use a variety of educational toys that facilitated language and perceptual-motor development in their children.

Data were collected on demographic variables from an interview with the parents. Children were tested pre- and post-training on the Cattell Developmental and Intelligence Scale and the Stanford-Binet Intelligence Test. There were two modes of approach. In Mode One the initial interview and the testing of the child were separated in time, while in Mode Two both were administered at the initial contact. Children were then matched on age, sex and ethnicity and randomly assigned to an early treatment group (entered program immediately) or a late treatment group (started 6-8 months later).

Variables that significantly predicted program completion were age of child, age of parent, birthplace of parent, language, mode of approach and time of entry. Thirty-two percent of the population of 518 completed the program. Children in the treated early group showed a significant gain in performance in comparison with the untreated late group. A subsequent comparison of pre- and post-training IQ scores for children from both groups showed that their performance improved significantly as a result of treatment.

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Introduction

Since biblical times all manner of expert advisors have offered their opinions of the best way to raise children. However, over the past century an expanded body of knowledge, substantiated by repeated studies, has accumulated about early growth and development (Levy, 1959) that can be shared with parents for the benefit of their children.

At birth and for a long time thereafter, the human infant must rely upon adults to nurture both physical and mental growth (Eisenberg, 1971). The maintenance of normal and progressive mental development demands continuous enrichment which must of necessity involve the parent, the child's "first teacher" (Gray, 1971). It is clear that parents serve as a mediator between the child and his environment since the development of language and perceptual skills does not take place in a vacuum. By the time he starts school the child has assimilated the meanings his caretaker gives to stimuli in the immediate environment and later he generalizes these to other situations (Olim, 1970). As he masters the basic concepts and grammatical forms of his language the child gains access to a new mode of learning and a new way of organizing the information he acquires. Therefore, by the time he enters school he should have a relatively comprehensive mastery of basic cognitive and linguistic skills that teachers will then use for further instruction.

Parents tend to raise children as they were raised, although, particular styles that were suitable in the past may not prepare the child to deal with our rapidly changing world. Patterns of child rearing are learned and transmitted culturally (Halpern, 1973). They are not immutable and thus, can be modified as they have been historically (Stendler, 1950).

Cooke (1970) has reported that little information is given to encourage healthy family relationships while attitudes acquired from their own upbringing often causes parents to pass their problems onto the next generation. Additional support for providing parents with information about child development was given by a study of child rearing practices of rural working class adolescent couples (De Lissovoy, 1973). The young parents interviewed had unrealistic ideas about early development. This contributed to their impatience and frustration with their infants that led to severe punishment, in several cases, of babies as young as 6 months of age.

The impact of the family on learning in the first years of life, when growth is rapid, has been shown to have differential effects on measured performance by the age of two (Golden, Bridger & Montare, 1973) that bear on the educational background of the mother. Hess, Shipman, Brophy and Bear (1969) studied the relationship between maternal behaviors and the development of cognitive skills as postulated by Bernstein (1961). They assigned urban black mothers and their 4 year old children to four social classes based on the father's employment. Interactive behaviors were measured by interviews and structured tasks. Variations in maternal constrategies related to social class, e.g. lower class mothers used more imperatives while middle class mothers were more instructive. Furthermore, these maternal behaviors correlated highly with preschool performance tests. A replication of this study in which the population consited of black and white lower cla[illegible] mothers and white middle class mothers reported similar results (Bee, Van Egeren, Striessguth, Pytkowicz & Nyman, 1969). Differences in maternal control strategies consistently related to social class rather than to ethnicity. Olmsted and Jester (1973) carried out a similar study with children ages 5-8 that concurred with the findings presented above.

They reported that the teaching styles of the middle class parent gave the child the freedom to apply various solutions as he attempted to solve problems while the instructions of the lower class parents often prevented their children from testing out alternative strategies.

Cross cultural and experimental studies have revealed the powerful effect of the home environment on the child's development or display of cognitive skills which ultimately effect conditions for learning and subsequent school achievement. Two thousand children from five ethnic groups on the Hawaiian island of Kauai were initially examined at birth. At 10 years of age ten times more had problems that related to environmental deficits than those who had suffered the effects of serious perinatal stress (Werner, Bierman & French, 1971). Repeated testing showed that inadequacies in verbal skills of lower class children persisted throughout high school (Werner & Smith, 1977). These outcomes were supported by a longitudinal study of approximately 16,000 children born in one week in Great Britain (Davie, Butler & Goldstein, 1972) who were reevaluated again at the age of seven. At that time the working class children already lagged far behind the middle class children on standardized tests of reading and mental development.

A striking demonstration of the long term effects of the early environment on later performance was reported by Skeels (1966) in his follow-up study of a group of institutionalized children. Thirty years earlier 13 children less than 3 years old, who were not eligible for adoption due to serious retardation, were removed from an orphanage to a state institution for the retarded (Skeels & Dye, 1939). They were placed individually on wards with older female inmates. A control group of children, who tested higher, remained at the orphanage. Over a two

year period the transferred children showed a marked increase in IQ scores which led to adoption for all. The dramatic change in their performance was not due to any specific treatment program but appeared to be a consequence of the attention and stimulation they had received from the adult retardates. When the subjects were contacted in adulthood all the experimental children were self supporting while the controls were in low paid menial jobs or institutionalized. (One male in the latter group, who had a hearing loss, received special training and achieved a higher level of employment.)

At school entrance poor children demonstrate a deficit in performance (Hunt, 1975) which is compounded by a progessive decrease in measured intelligence as they mature (Garrison, 1972). They often fail to receive the informal coaching from their parents that forms the basis for the kind of verbal and perceptual interactions required to participate effectively in the school system (Blank, 1968; Elam, 1969). In contrast, middle class children are prepared for future instruction by way of the "hidden curriculum" (Levenstein & Levenstein, 1971, p. 75) involving language and play that is an integral part of their home environment.

To disrupt the cycle of poverty and offset its cumulative academic disadvantage (Deutsch, 1965) Head Start programs were established in the 1960's (Bissell, 1973). There was, however, no uniformity in program planning and goals set were often unrealistic. Post-program evaluations showed that children failed to maintain gains in test performance over time. Another strategy for nullifying the effects of less priviliged environments were early stimulation programs where teaching was carried out by staff members. Although parental involvement was encouraged it was not an essential element of the treatment programs. Significant IQ gains were reported immediately post-treatment in a stimulation program

for infants in a daycare center (Caldwell & Smith, 1968) and in a home based tutoring program for 2 and 3 year old black males (Schaefer & Aaronson, 1972). However, one year later the gains were attenuated. This suggested that support services for young children should include the parent as part of the treatment team to provide the constant support the developmental process requires (Schaefer, 1970).

One of the first compensatory programs to directly involve parents in the educational process was instituted by Gray and Klaus (1965). Home visitors saw parents for periods ranging from 2-3 years and gave them information about preschool activities to enable the mothers to maintain the educational program in the home. Three years post-treatment there were still differences in measured IQ that favored the experimental children while younger siblings of treated children had a higher level of performance than siblings of control children (Gray & Klaus, 1970).

The Mother-Child Home Program (Madden, Levenstein & Levenstein, 1974) concentrated its teaching efforts on the dyad. Black parents of children ages 2-3 were visited at home bi-weekly by trained Toy Demonstrators for one or two years. Lambie, Bond & Weikart,(1974) enrolled parents of children from 3-11 months of age in an 18 month home based program. Parents in the experimental group were taught interaction techniques by skilled teachers. Lombard (1973) sent community workers into the homes of 4 year olds from oriental families in Israel. Mothers were taught to carry out a series of programmed teaching activities for periods ranging from 1-3 years. The results of the intervention studies presented above indicated that parents with limited educational backgrounds could be assisted through a variety of curricula to stimulate their children's cognitive development. Moreover, intervention programs that used parents as teachers led to

significant gains in intellectual performance by young children from poor families (Lambie et al., 1974; Levenstein, 1975) who would be expected to show a lag in cognitive development over time (Brown & Halpern, 1971).

The widespread need for educational intervention services suggested that other modes of service delivery be explored since implementation on a broad scale would require cutting back on the costlier aspects of intervention. One such possibility was to recruit and train parents in agencies used habitually and comfortably by low income families which would utilize staff more efficiently than the home based service models.

In well baby and pediatric clinics,there is available a captive audience of parents of young children who are the target population for compensatory preschool programs (Schmidt, 1967). The medical facility is often the first public institution to have an ongoing contact with the parent and young child. However, it generally has not been sensitive to the current health needs of children, which have changed dramatically as a result of the introduction of mass immunizations and broad spectrum antibiotics. This has been reflected in the increased use of ambulatory services rather than inpatient care (Morris, London & Glick, 1976). Furthermore, the breakdown in the extended family and the dominance of the nuclear family has caused parents to turn increasingly to the health care worker for advice in problems of child rearing (Fox, 1975; Kivett, 1970). The evidence suggests that the medical facility has the capacity to develop systems of service delivery that cultivate inherent strengths in the parent child relationship rather than focusing on deficits within the family. The addition of a cognitively oriented parent education component to ambulatory pediatric care would

make this service available to a large population of low income families.

The study to be presented made us of the existing relationship between a public institution and the community. The pediatric clinic playroom was used as a base to both recruit parents and teach them to exploit their role of "parent-teacher." It was logical to expand the service offered by the playroom to systematically instruct parents how children learn by play rather than restrict it to children waiting to see the doctor (Morris & Reuben, 1970).

The hospital has been used as a recruitment site for enrichment programs for babies born to teenage, unwed, black mothers. Both of the studies to be described carried out the treatment at home. An educational component was included in a comprehensive health care program dispensed by the public health nurse who gave the mother information about infant development along with a demonstration of how to use age appropriate toys (Gutelis, Kirsch, MacDonald, Brooks and McErlean, 1972). Children were seen from birth to 3 years of age. Post-program comparisons of treated children and a matched control group, who had received routine health care, revealed that the former had a significantly higher level of performance on the Stanford-Binet. Scarr and Williams (1971) carried out stimulation activities in the premature nursery with low birthweight infants and continued treatment for one year. Initially, the experimental infants had a lower level of performance than the matched control group. When the program ended the treated children performed at near normal developmental levels on the Cattell while the controls were one standard deviation below the test norms.

Statement of the Problem

The medical facility, in particular the well baby clinic, which provides health care for poor children from birth to school entrance is a primary institutional contact for low income families. To take advantage of the natural interface between parents and an institution perceived by them as valuable a systematic educational program that parents of children 20-39 months of age would carry out at home was instituted in a pediatric clinic. Both recruitment of dyads and the subsequent treatment program were carried out in the medical unit. The 12 session Parent Education Program was designed to introduce parents to basic notions of child development, in the context of early learning, as part of a comprehensive health care program for preschoolers. It was expected that some parents would need additional information to deal with the changing needs of the child. However, it was hoped that this would be available in preschool programs in the community.

The research study dealt with two questions. First, was the well baby clinic a feasible site for teaching parents intervention techniques that they would apply at home. Parents were categorized on 4 levels of program status: (1) Completed 12 sessions of the program (PC); (2) Dropped out of program (DO); (3) No shows, did not keep first training appointment (NS); (4) Lost contact as evidenced by mail returned after first IQ test (LC). Data on participants who achieved different levels of program status were related to demographic variables, such as, sex of child and birth order. Second, would children of 20-39 months, from an educationally high risk population, benefit from a cognitively oriented intervention program carried out by

their parents. The programmed activities in the curriculum were concrete tasks designed to show parents how to help their children acquire learning skills appropriate for their age.

Subjects and Procedures

Subjects

Five hundred and eighteen mother-child dyads were recruited from the Mount Sinai Hospital Pediatric Clinic, the Mount Sinai Hospital Pediatric Emregency Room and the East Harlem Child Health Station.

The hospital facilities served children from birth to adolescence. In the clinic patients were seen by appointment only, while children with walk-in illness were treated in the emergency room. The child health station, a unit of the New York City Department of Health, provided well baby care to children from birth to 6 years of age. Records of the clientele seen at both agencies indicated that the number of boys and girls in the age group of the sample were similar.

The subjects were drawn from low income families from the East Harlem and South Bronx communities as defined by the catchment areas of the particular agency. However, a small number of families who had moved out of the district continued to use the health facilities with the permission of the clinic staff. The ethnic breakdown of the Mount Sinai population was approximately 60% Hispanic and 40% Black.

Design

It was believed that a traditional experimental/control group design would be objectionable to the community. Therefore, an early/late design was developed. After a suitable sample size was recruited subjects were grouped by age of child, sex and ethnicity and randomly assigned to either group, using a table of random numbers (Snedecor & Cochran, 1967). The "early" subjects were inducted into the program immediately; the "late" subjects entered 6 to

8 months later. This permitted the "late" entry subjects to serve as a "no treatment control group." Parents of children assigned to the late group were sent a letter that stated the approximate time they would be contacted to enter the program. Bilingual letters were sent to Hispanic parents.

The literature on the assessment of intervention effects always points to attrition rates and volunteerism as important biasing factors. To determine if self-selection processes were taking place prior to program entry there were two modes of induction. In Mode One, the interview and evaluation of the child were separated in time. In Mode Two, both were given at the initial contact. This strategy was developed since the pilot studies at both Bellevue and Mount Sinai Hospital had indicated that the attrition between the interview and evaluation was high. It appeared that many parents agreed to participate although they had no intention of entering the program. The time interval between the interview and the evaluation permitted them to make a decision without the pressure they may have reacted to in the waiting room. It was expected that Mode Two would yield demographic and IQ data on those dyads that would possibly have dropped out in the time interval allowed in mode one. The information gained would indicate if there were differences in the sample that were related to program status.

Testing of the children. Children were tested with the Cattell Infant Intelligence Scale and the Stanford-Binet Intelligence Test before and after the treatment program. Children in the late group were tested a second time before they began the training. Following the post-treatment test all subjects were tested at 6 month intervals to assay the continuing effect of

the intervention. Needless to say there was no formally untreated control group for these needed measurements.

By establishing mean levels of performance for children in the community it was possible to identify children who appeared to be suffering from possible organic and/or emotional problems. Children who scored more than two standard deviations from the mean at pretest were reexamined one month later to see if their performance had been due to problems in the testing situation. The clinical psychologist reviewed the tests and if the scores were similar the child was referred to appropriate clinics for further examination. The test was translated into the Spanish dialect of the Puerto Rican population under study.

Parent-Child Interaction Measure (PCIM). A toy sorting task (Hess, Shipman, Brophy & Bear, 1968) was administered to the dyad pre- and post-training. This semi-structured interaction measure was one of a series of tasks used by Hess and Shipman (1968) to test their hypothesis that differences in maternal teaaching styles shape the child's style of processing information and ultimately effect his academic performance. Since this was the rationale for the treatment variable, the educational intervention program, it was expected that the measure selected would be sensitive to changes in maternal teaching behaviors fostered by the Parent Education Program. The toy sorting task was pilot tested and found to be suitable for children ages 2 and 3. The scoring procedures were developed by the research staff of the project. Instructions to the parent, scoring procedures and forms are in the Appendix.

Parent interviews. Interview forms were used to obtain basic demographic data from parents at the time of the first IQ test. The forms are available in the Appendix.

Materials

Parent Education Program Curriculum. The curriculum was based on the theoretical constructs of development of Piaget (Piaget, 1963) and the developmental scales of Gesell (Gesell & Armatruda, 1947). The educational approach derived from Montessori (1964) who related the child's desire to seek out different stimuli at succeeding ages to a systematic set of play materials. However, in contrast to the Montessori method which stresses individual learning experiences, the training program emphasized the importance of the parent-teacher providing the child with rational explanations and optional solutions as part of his learning experiences during play activities. Parents were advised to attach words to actions because children require direction and instruction to learn. The mother became aware that the concepts her child learned, such as matching colors, were the result of a particular interaction that she had instituted in which she directed the child's attention to certain features of a toy. Although the activities were play for the child they were not random behaviors for the parent who was becoming aware of the cognitive needs of her child at different stages of development.

The structured teaching method was devised to show parents that there were alternative ways to approach children. They were encouraged to seek out those techniques that worked best for their child at a particular stage of development. During the training session the playroom assistant would role

play "child" to prepare the parent for normal behaviors they would have to react to at home. For example, by placing a round block in a square hole the trainer demonstrated that a child will not always learn a task the first time and may have to repeat a particular behavior many times before he really understands it. This would lead to a discussion of what kinds of behaviors to expect at different ages. It was important to relate to the parent that inconsistencies in behavior were not "bad" but part of the discovery process involved in learning. The value of praise was stressed as a means of encouraging the child to attempt to master new skills. During role playing, methods of positively reinforcing learning behaviors were demonstrated.

There were 12 sequentially graded exercises for each group that concentrated on perceptual-motor and language skills and problem solving (Morris, 1972). Each toy selected had a primary feature so that parents with limited educational experiences were able to immediately perceive the relationships of the different elements, for example, the openings in the shape box indicated clearly where each differently shaped block was to be placed. The mother was taught via modeling to supply direction, language labels and motivation, while the built-in cues of the materials enabled the child to follow her instructions. The activities for each exercise were broken down into small steps that led to a goal, such as, matching colors or shapes. The teaching materials were standard toys that were used to teach age appropriate concepts including object labeling and shape discrimination. Materials used included the color cone, building cups, one and two piece puzzles, the shape box, pop it beads and fit-a-shape.

The curriculum was designed to meet the needs of the population served as well as the abilities of the paraprofessionals who carried out the training program. It was suspected that approximately 20% of the population was semi-literate and this was a consideration in developing the curriculum. An exercise sheet was prepared for each activity that delineated the steps with verbal labels. The manual (Morris, 1972) was used by the program staff only. However, a worksheet with a pictorial outline of each exercise was given to the parent at the close of the training session. It was used as a guide when carrying out the training at home. The worksheet was returned to the playroom assistant who helped the parent fill it out before proceeding to the next exercise.

The curriculum was developed at Bellevue Hospital. Prior to the study it was field tested at both Bellevue and the Mount Sinai Hospital with small numbers of parents as well as with paraprofessionals (Morris, 1973; Morris & Reuben, 1970). It was found that the curriculum could be used appropriately by both groups.

Procedures

Recruitment of subjects. All parents in the respective waiting areas with children in the target age group were contacted by bilingual interviewers. Since the study was carried out in open areas it was felt that it was obligatory to permit all waiting parents, whose children met the age requirements, to participate. However, the research study was limited to children from Hispanic and Black families since the numbers in the other groups were too small.

The initial wave was large (n = 286) to allow for the expected attrition. However, problems arose in scheduling appointments for testing and interviewing

due to lack of space. Therefore, the recruitment procedures were revised. After 30-40 subjects were recruited they were matched and assigned to entry groups. A single mode was used to recruit each cohort before subjects were assigned to entry groups.

Interview procedure. A brief description of the program was given by bilingual interviewers. First, parents would be shown how to teach their children at home by playroom assistants in the clinic playroom. This would help the children do better when they went to school. Second, the child would be evaluated before and after the teaching program. If the parent agreed to participate, an initial interview form was filled out. Then depending on the mode of approach the parent was given a later appointment for the evaluation or the child was tested at the first contact.

Implementation of the Parent Education Program. Hispanic and Black playroom assistants, from the community, were randomly assigned to parents with language being the only mitigating factor. Spanish speaking only parents were randomly assigned to the bilingual staff members.

Role playing techniques were used in individual training sessions. First, the playroom assistant modeled the teaching method. Then the parent was asked to take the role of "mother-teacher" while the trainer became the "child." Training sessions lasted from 30-45 minutes. The parent was given the materials and asked to work with her child at home for 15-20 minutes daily. At succeeding sessions the trainer reviewed the effectiveness of the previous exercise with the parent before presenting the new materials.

Inexpensive toys and books were kept by the parents. Costly materials, such as the shape box and fit-a-shape toy, that were washable were returned and reused. Parents who used public transportation were given carfare when they came to the clinic only for the training program. At post-training evaluations each child also received an inexpensive toy after the testing was completed. Carfare was supplied for post-training testing as well.

Approximately 90% of the parents brought the target child to the clinic when they came for training. Reasons for not bringing children were related to natural happenings like bad weather or parents had scheduled medical appointments for themselves at the hospital. Therefore, the staff member usually had the opportunity to observe the child in the playroom before and after the treatment session. Information derived from the child's behavior with age appropriate toys in the playroom as well as his interaction with the parent was incorporated into the teaching session.

A parent-child observation was scheduled after the third training session. It was held in a private room in the clinic with both the playroom assistant and program director in attendance. The parent was asked to demonstrate how she worked with her child at home while using materials received in the previous session. In contrast with the informal observations discussed earlier the parent-child observation permitted the staff to directly monitor the parent teaching her child. It was also used for the in-service education of the paraprofessional staff members. Parents did not object to this procedure and found it to be of value.

The playroom assistants were trained to use the curriculum for a period of 4-6 weeks. They worked both individually and with other staff members.

They were observed by the program director who had demonstrated the teaching methods as part of in-service education. The curriculum was memorized before the staff started to work with parents since written materials were not used as part of the teaching method. In addition, after the playroom assistant started teaching parents she was observed periodically to determine if the standards set in the curriculum were maintained. Demonstrations of teaching methods were also given at weekly staff meetings.

Results and Discussion

The results of this investigation are presented in nine sections. First, a table was constructed to present the distribution on program status, sex and ethnicity. These data are followed by analyses of initial IQ differences between the basic groups and subgroups in the study. The third section is concerned with the effect of the program on the performance of the children. The fourth section presents the demographic variables and explores their relationship to program status. Next, personal, language and design variables are presented and their relationship to program status is examined. The results and their implications are then discussed. In section eight the data on the Parent Child Interaction Measure are presented and discussed. Finally, a series of additional research findings are described.

Description of the population

The characteristics of the sample population were examined to see if there was an initial equivalence between the 4 groups as categorized on program status. These findings are presented in Table 1.

Insert Table 1 about here

A comparison of the percent of subjects in sex and ethnic categories for both the total sample and the program completed subjects is presented in Table 2.

Insert Table 2 about here

The data presented in Tables 1 and 2 was unexpected. It emphasized the dominance of Hispanic families in the sample population. It has been assumed that the ethnic breakdown of the population at the child health station was similar to that of the Mount Sinai population which was approximately 60% Hispanic. However, the sample at the East Harlem site was about 80% Hispanic.

In order to establish a rational basis for comparison of the various groups and subgroups in the study, and for an adequate discussion of the findings it was necessary to analyze the initial IQ data for the total sample as any initial or preexisting differences between the groups would indicate the need for different analytic procedures or for caution in the interpretation of outcomes. Therefore, the total sample was compared with respect to sex, ethnicity, entry, mode and age.

A double classification analysis of variance was computed in Table 3 employing the initial IQ as the criterion variable. Subjects were classified according to sex and ethnicity.

Insert Table 3 about here

There was no significant difference for the main effect of sex. However, there was a significant difference between ethnic groups in favor of the Black subjects. The initial IQ's were treated by the same double classification analysis of variance to examine main effects of ethnicity and entry (early/late). The only significant effect was ethnicity.

Since there was some concern that the entry variables might yield differential initial IQ scores on program status, a single classification analysis

of variance was carried out on three levels of program status. Separate analyses were done for both the early and late groups. No significant differences were found for the early entrants related to Program Status categorized on three levels. The analysis for the late entrants is presented in Table 4.

Insert Table 4 about here

The data presented in Table 4 revealed that for the late entrants the Drop Out group had a significantly higher mean IQ than the other two groups. Two children in this sub-group had inordinately high IQ's of 142 and 156, respectively. A subsequent analysis of the late group at the second IQ test, given before they started the treatment program, revealed no significant differences.

It has been assumed that parents who volunteer and complete an intervention program tend to be better off than those who refuse service or drop out. This is moreover, assumed to bias such measures as initial IQ scores and may even be related to differential gains due to intervention. As important as these biasing factors are presumed to be they are quite difficult to measure since it is not possible to obtain data on subjects who will not participate in a given program. Two modes of approach to the client were devised to control for these factors. In Mode One, testing was deferred, whereas, in Mode Two, all testing procedures were administered at the initial time. A self selected group of parents who asked to join the program, without

recruitment, were classified as "volunteers." The Mode One approach was used with this group.

A double classification analysis of variance was carried out to investigate the effects of Modes One and Two on program status; while a single classification analysis of variance was used to inspect the effect of the volunteer category on program status. No significant differences in measured IQ related to program status were found for Modes One and Two and the volunteer subjects.

Finally, initial IQ scores were analyzed with a single classification analysis of variance with age as the classifying variable for the total sample and for the three subgroups. Age was categorized on three levels: 17-20 months; 31-36 months; and 37 months and above. No significant differences related to age and initial IQ scores were found in the total population. These findings were corroborated by analysis of the three subgroups, Program Completed, Drop Outs and No Shows.

Performance of the Children

The next series of tables presents analyses of the effects of the intervention on the Program Completed subjects. Table 5 compares the IQ's of the early group, post-treatment and the late group, pre-treatment.

Insert Table 5 about here

The findings in Table 5 reveal that entry was significant at the .01 level, while a comparison of the initial IQ with the second IQ was significant beyond the .01 level. There was a significant interaction ($p = .01$) demonstrating that

differences occurred between the two groups that were reflected in a higher mean IQ score for the treated subjects post-training.

The critical test was the test of the interaction. This was a test of whether or not the changes in the IQ's of the two groups were the same or were unlike. In this instance the gain of the early, treated group was significantly larger than that of the late, untreated group. To confirm this conclusion, another analysis was appropriate, a test of the pre-program and post-program data for equivalent changes. Specifically, an effective program would show no interaction of the pre-post tests with the entry effect. Accordingly, in Table 6 comparisons of pre-training IQ scores and post-training IQ scores for both groups are presented.

Insert Table 6 about here

The data presented in Table 6 supported the findings of Table 5 that intervention led to improved performance of treated children from both entry groups. A comparison of pre-treatment and post-treatment test scores was significant at the .0001 level. No significant differences were found for the entry variable and there was no significant interaction.

An examination of the initial IQ scores for the total population revealed significant differences in ethnicity favoring the Black children. Analyses of pre- and post-treatment IQ scores for the Program Completed subjects categorized on ethnicity are presented in Table 7.

Insert Table 7 about here

The findings in Table 7 revealed that there were no significant differences between Spanish and Black subjects. All children had completed the treatment program and no significant interaction occurred as expected. However, both ethnic groups showed positive gains following the intervention that were significant at the .0001 level. This analysis contrasts with the analysis presented in Table 3. The smaller n's in the Program Completed sample do not support the significant differences in performance on ethnicity for the total sample.

In Table 3 it was revealed that there were no sex differences for the total sample in terms of initial IQ scores. An analysis for the Program Completed children of pre- and post-treatment IQ scores categorized on sex was computed in Table 8.

Insert Table 8 about here

In contrast to findings on the sex variable for the total sample there were significant differences as a result of treatment related to sex at the .003 level favoring female subjects. As a result a two way analysis of variance was computed on IQ 1 by both sex and status. No significant differences were found. The interaction approached significance which was related to the high initial mean IQ scores of the Program Completed girls and boys from the Drop Out group. However, both sexes responded to the intervention with positive gains that were significant at the .001 level. There was no significant interaction as overall changes in IQ scores were in the same direction and of the same magnitude for both groups. The female subjects made a slightly larger gain of approximately 1½ points.

The findings of significant sex differences in the Program Completed subjects demanded a further examination of the sex variable using analysis of covariance.

Insert Table 9 about here

The data presented in Table 9 revealed that when differences in initial IQ scores were adjusted, significant differences between the two groups remained. However, gains for both groups were in the same direction and were equivalent since in the earlier analyses there was no significant interaction between sex and improvement in IQ.

To assess the durability of the intervention procedures, Program Completed children were asked to come in for post-post program testing. Ideally, all children came in six months after the post-program evaluation. Realistically, the time lag extended from six months to one year because of the difficulty in setting up appointments. The data are presented in Table 10.

Insert Table 10 about here

The data presented in Table 10 indicated that the gains for both groups were attenuated after six months to one year post-program and the loss was significant at the .05 level. There was no interaction. Losses were not characteristic of one group or the other, however, the late entries showed a greater loss than the early entries. Parents were asked to continue to bring their children in for testing at 6 month intervals. Expenses were paid for public transportation and a toy was given to the child. Those who did not come to the post-post testing session were offered a gratuity of five dollars;

however, it was found that disinterested parents did not return even with monetary incentives. In contrast, those who continued to have an investment in the program beyond direct participation kept post-post training appointments, even on Saturday.

Insert Table 11 about here

Analyses of post-post training IQ tests presented in Table 11 were limited to means and standard deviations because of the differential drop-out rate. It was revealed that early trainees maintianed the post-training gains while the late entrants showed a loss and then a slight gain on Test 5 that was possibly related to the particular children who returned for testing.

Discussion

One proposition tested by this investigation was that a limited educational intervention program, carried out by parents at home, would lead to increased competence in performance of preschoolers from educationally high risk backgrounds. Gains in performance by the children were mediated through parents since children were not treated directly. It was anticipated that changes would occur in the parent-child interaction as a result of the mother's educational experiences in the program. The parent's increased fund of knowledge about early learning and related aspects of development would enable her to sustain her child's intellectual growth to prevent the developmental lag that occurs in poor children as early as two years of age (Brown & Halpern, 1971; Schaefer, 1968).

The data presented supported the assumption that parent participants could effect improved performance in their preschool children. The total sample and the program completed subjects were analyzed on sex, ethnicity, entry, mode

and age to see if program effects could be attributed to initial differences in IQ scores. No significant differences were found for entry, mode and age for both groups. The ethnic variable was significant for the total sample favoring the Black children. A similar trend was observed in the Program Completed subjects. Black children had higher IQ scores both pre- and post-program. The differences, however, were not significant.

The findings on sex were divergent for the total sample and the Program Completed subjects. No significant differences were found for the former, whereas, in the latter group there were significant differences with girls surpassing boys on both pre- and post-training test scores. However, the gains on the post-training tests were in the same size and direction for both sexes. It appeared that some selection factors were operating for boys and girls in the treated group. A possible cause for the higher level of performance by girls across ethnic groups may be partially explained by the child rearing patterns in the Black and Hispanic communities in this study. There was encouragement of what could be described as "macho" behavior for boys. That is, aggressive as well as negative behaviors were applauded as well as condoned when exhibited by boys; whereas, girls were expected to conform more readily to instruction. The testers reported that boys, expecially those of Spanish heritage, were the most difficult to test.

It should be mentioned that although the children in the study were difficult to test, in terms of getting an adequate estimate of performance, they did not object to the testing procedures. Rather, they enjoyed the attention and often lollipops were used to entice children to leave the testing room rather than to induce cooperation. Most children in East Harlem had had little experience in the kind of dialogue that takes place in the testing situation since they were not encouraged to perform on the cognitive parameters

measured. Their parents appeared to be more concerned about behaviors such as eating and toilet training. Possibly, their lack of interest in the concurrent intellectual development of their children was reflected in the diminished ability of the latter to respond to the tester's requests. It did not indicate a lack of cooperation for the majority of the subjects tested.

In this sample it was found that children 2½-3 years of age were the most difficult to test. This may indicate a developmental lag particular to this population since White and Watts (1973) reported that in the Brookline project they postponed testing during the 15-21 month period because of fussiness and lack of cooperation. However, in the study under discussion there was no possiblity of delaying testing. By 3 years of age the children were generally more amenable to directives.

Demographic Variables

The relationship of a variety of demographic variables to program status was inspected in an attempt to develop a profile of a parent who would complete the program. The 4 levels of program status follow: (1) Program Completed (PC); (2) Drop Outs (DO); (3) No Shows (NS); (4) Lost Contact (LC). Due to small numbers in the Lost Contact category it will be pooled with No Shows when indicated.

Interviewers were asked to respect the client's wishes in responding to questions involving demographic and personal variables. This accounts for the disparity in numbers in the analyses to follow. As specified in Table 1 there were children in the Program Completed group who did not meet the criteria for IQ analysis. Since the intervention program was carried out in a service institution, treatment was provided for children with physical and emotional problems whose parents had participated in the recruitment phase of the study. Their data were included in the

assessment of the relation of demographic variables to program status since some completed the program. The total sample size was large enough to allow for this variance in terms of presenting results and discussing their implications. Data are presented on variables significant at the .05 level. Findings on other variables inspected are summarized in tables at the end of each section.

Insert Table 12 about here

The findings in Table 12 revealed a significant relationship between age at the initial IQ test and program status. The highest response in terms of Program Completed children was in the middle age group which also had a markedly lower number of Drop Outs than the other two groups.

Variables that did not predict program status are presented in Table 13.

Insert Table 13 about here

Although the relationship of ethnicity to program status was not significant at the .05 level, it was tempting to speculate on the differences that did exist in the data. It suggested that there was a higher response in terms of program completion from the Spanish community. The analysis of the relationship of distance from the institution and program status revealed no significant differences. It had been expected that distance from the recruitment site would make a difference in terms of program completion and the findings were unexpected. However, the data were suggestive of a positive relationship between the location of the home and access to the institution. It was of interest to find that in the Program Completed group persons living less than ½ hour away by public transportation had less than

the expected frequency, while those living farther away had the expected number of program completers.

In conjunction with the distance from the institution, the site of the interview was expected to be a good predictor. The obtained results were unexpected and will be presented. There were four areas of initial contact: (1) Mount Sinai Hospital Pediatric Clinic; (2) Mount Sinai Hospital Emergency Room; (3) East Harlem Child Health Station; (4) Mount Sinai Hospital Prenatal Clinic. The child health station had the highest number of Program Completed subjects as predicted, since it had the greatest interface with the population. Unexpectedly, there were fewer Program Completed subjects from the Pediatric Clinic than the frequency expected, while the expected and observed frequencies from the emergency room were equal. These findings were directly contrary to pre-program predictions based on the supposed greater stability of the clinic population because of their presence due to a scheduled appointment.

Personal Variables

Additional demographic variables were inspected to discern those with predictive value for Program Completed subjects.

Insert Table 14 about here

The data presented in Table 14 indicated that as the mean age of the parent increased there was a higher rate of program completion that was significant at the .004 level.

Insert Table 15 about here

The findings presented in Table 15 showed a significant relationship between the birthplace of the parent and program status. It was clearly revealed that parents born outside of New York City were more likely to finish the training program, particularly if they had emigrated from Puerto Rico.

Personal variables that were not significant in relationship to program status are presented in Table 16.

Insert Table 16 about here

In addition, length of time in residence was not significant although it had been anticipated that families who maintained a residence for a greater length of time would be stable and would be more likely to complete the program. This assumption was not supported although the Lost Contact group ($n = 19$) had a markedly shorter length of time in residence than the other three groups.

Language Variables

The language variables correlated with ethnicity as expected; however, it should be pointed out that in the English speaking only group there were some parents of Hispanic lineage, while Spanish speaking groups were pooled.

Insert Table 17 about here

The findings were significant at the .005 level. Spanish speakers were more highly represented in the Drop Out category than expected, in contrast, to the English speaking subjects who were higher in the No Show category.

Insert Table 18 about here

The data presented in Table 18 supports the earlier findings on the relationship of language to program completion. Significantly more children

speaking Spanish or a combination of Spanish and English were in the Program Completed group or had had some contact with the training program.

Insert Table 19 about here

The language spoken in the home, presented in Table 19, supported the positive relationship of Spanish speakers to Program Completers. The data presented on language was consistent in that Spanish and Spanish/English speaking parents and children were more likely to complete the program or to have had some experience in the program, as in the Drop Out category, than English speaking families. These findings support the data presented earlier on ethnicity and parent's birthplace that for the population under study a Hispanic background led to greater contact with the Parent Education Program.

Design Variables

In the methods section it was explained that the design variable of mode was developed to assess selective factors that may have biased entry into the program. The findings are presented in Table 20.

Insert Table 20 about here

The relationship of mode to program completion was significant at the .001 level. The prediction that volunteers and Mode One subjects, who had a time lag between the initial interview and the evaluation, would have a higher rate of completion was confirmed.

The early/late feature of the design gave all volunteers an opportunity to ultimately participate in the program. Table 21 presents the data on this variable.

Insert Table 21 about here

The relationship of entry to program status was significant at the .001 level with early entrants more likely to complete the program than late entrants. It appeared that subjects contacted immediately regarding the intervention program were more likely to enter training and ultimately finish the program.

Additional design variables measured in relation to program status were: response to trainers (seven); scheduling of initial training appointment by letter and/or telephone; arrived for initial training appointment at first or second scheduled appointment. Analyses of these variables revealed no significant difference in the rate of completion.

Discussion

The second proposition to evaluate was the suitability of the well baby clinic as a site for teaching parents techniques to foster mental growth. Parents were required to keep appointments at a public agency for both the educational experiences and testing procedures in contrast with home based programs. Attrition in the latter has been relatively low. Lambie et al. (1974) and Levenstein (1975) reported that 64% and 88% respectively, maintained contact during the follow-up phase when treatment was completed. It was hypothesized that various categories of demographic variables would have predictive value in determining different levels of program status. The results presented ranged from insignificant to strongly predictive.

The findings on birth order were unexpected as it had been assumed that there would be more first born children in the Program Completed group. No significant differences were found for this variable, however, later born children reached the expected frequency while there were less than expected first borns. One reason may be that many families had several children under three years of age. It is likely that those with infants as well as toddlers were unable to arrange their schedules to allot time for a program for the older child because of the needs of the baby. The age of the parent may also have been a factor in the greater number of later born children in the Program Completed category. It was reported in Table 14 that the mean age of the Program Completed parents was higher than that of the other three groups. It is suggested that older parents may have had children in school who were not doing well. This may have made them more aware of the need to prepare the younger child for school while young mothers with only one child were often overwhelmed by the demands of the first born and were unable to organize their time to permit them to participate in the program. Since parents referred to both the program and the playroom as "school" it would seem that they looked upon the service as an educational experience. This is an opportune time to emphasize the value that parent participants placed upon education. They felt that proficiency in school would lead to success in the job market which meant more money and was the way for their children to get out of the cultural and economic ghetto.

The relationship of the child's age at the initial IQ test to program status was unforseen. Significantly more children in the middle age group of 2½ to 3 years completed the training. The increased responsiveness of children in this age group may have served as a positive reinforcement and induced parents to stay in the program. Moreover, children of this age are extremely active and curious and the play activities offered parents

practical ways of redirecting their children's energy. Parents of older children said they responded quickly and positively, whereas, it required more time and patience to gain the cooperation of the younger children, who had a shorter attention span.

The sex of the child had no significant relationship with program status. However, there were more females in the Program Completed and Drop Out categories than expected, while it was reversed for the male subjects. Girls tend to be more docile and amenable to instruction and are easier to work with than boys. For these reasons parents of girls may have been more willing to enter and complete the training. Sex differences in performance may also be related to the data reported in Table 8 that pre- and post-training IQ scores of girls were higher than the boys in both ethnic groups. In the population under study it was found that women often had higher job status than men. This may be related to their socialization in the early years when the male role was defined as physical while females were expected to be more academically inclined.

Although the findings on ethnicity were not significant, it was tempting to try to find a rationale for the preponderance of Hispanic subjects. There were antagonisms between the Blacks and Hispanics in the community as both sought to utilize the limited resources available. The staff at East Harlem was bilingual because of the large number of Spanish speaking only adults attending the health station who ultimately entered the program. There is a possibility that the Black parents perceived the intervention program as Spanish oriented because of the staff and this may have caused some to decide not to enter the program. Here again there may have been selection factors operating that were not controlled by the design.

Distance from the institution had no significant effect on program status. However, parents living farther away were more likely to complete the program than those less than ½ hour away by public transportation. It is suggested

that adults living farther away from the hospital were more comfortable in refusing to participate. In contrast, those who lived closer, in terms of transportation time, were unwilling to refuse to comply with the interviewer's request. However, later they revealed their true feelings by a higher than expected rate of No Shows.

The contradictory findings discussed earlier relating to site of interview suggest that carefully considered assumptions must often be rejected when the evidence is analyzed. It was found that the emergency room which handles more high risk families was as suitable as the pediatric clinic as a recruitment site for an educational intervention program. In addition, contact with the emergency room population permitted the program staff to provide a service to a more deprived population than that using the clinics.

The personal variable, mean age of parent, had predictive value. It is suggested that older parents were ready to take advantage of this new service because they were cognizant of their strengths and deficiencies, whereas, younger parents were less confident of their abilities. It is posited that the latter were threatened by the idea that they needed help with child rearing while the former were seeking information and guidance. The length of time in residence had been perceived as a reliable predictor of stability. The longer time interval at the current residence reported by the Program Completed subjects served as an additional predictor of completion although the relationship did not reach significance.

The strong predictive value of birthplace outside of New York City presented in Table 15 may partially explain the ethnicity findings. The higher than expected response from adults born in Puerto Rico coupled with the expected number of responses from those born in the South and other areas outside New York City contrasts strongly with the markedly lower response of parents

born in the city. This difference may reflect cynicism as well as a lack of motivation on the part of native born New Yorkers towards new programs. The findings suggest that in this particular population the immigrants came to the city to take advantage of services that would enable them to better their family situation.

The significance of the findings on the language variables was supportive of data presented earlier on ethnicity and birthplace of parent. In the population under study language proved to be a powerful predictor of program completion. East Harlem and Spanish Harlem are almost synonymous terms. This area is considered the center for the Hispanic community in New York. Therefore, the language findings were expected as the population at the child health station was heavily Spanish. In addition, the playroom assistants were the only Spanish staff working in the health station. This possibly biased the Spanish speaking parents in our favor.

The design variables proved to be excellent predictors of program status. The Mode One strategy gave parents a time interval to make an independent judgment regarding program entry. This permitted those parents who were not planning to participate to drop out before testing ensued. It appears that the Mode Two group included many parents who did not plan to enter the program as evidenced by the high rate of No Shows. The findings for the entry variable were expected as it was assumed that a delay in starting the program would result in a higher rate of attrition.

In reviewing the predictive value of the demographic variables it appears that language and ethnicity outcomes may have been idiosyncratic to the population under study. However, the design variables were not related to any particular cultural preferences. Rather they involved practical considerations, specifically time of entry and the freedom to make a decision about participation outside of the institutional setting. These findings could be generalized to other populations since they appeared to be independent of the sample recruited.

The rate of attrition was lower than expected. In the pilot study (Morris, A., 1973) it was reported that approximately 25% of the total population completed the program. In other intervention programs (Andrews, Blumenthal, Bache & Weiner, 1975; Lambie et al. 1974) attrition rates were presented on children whose parents had entered the programs as either treatment or control subjects. However, the design employed in this study also provided information on the large number of children whose parents did not participate. Out of a total of 518 subjects who took part in the initial testing 168 parents (32%) completed the Parent Education Program. The population was then broken down into two groups, those who had some contact with the training program and those who had none. The former group (n = 293) was composed of Drop Outs (who generally completed less than 3 sessions) and the Program Completed subjects and the latter (n = 225) was made up of No Shows and Lost Contacts. Under these conditions the percentage of the total sample who had entered and/or completed the program was 56%. The rate of program completion of this subgroup of 293 was 75%. This indicates that subjects who started the training had a better than even chance of completing it.

The data presented suggests that the three populations, those who completed the program, those who had minimal contact with it and those who had none, were similar on many demographic indices. A profile of the Program Completed parent is not clear cut and was partially circumscribed by the community in which the study was carried out. It was found that older (mean age, 29.65 years), Spanish speaking parents, born outside New York City were more likely to finish the training. Generally, those who came in for testing after the initial interview and entered the program immediately were more likely to be in the Program Completed category. Possibly there were differences related to program status that were due to attitudinal factors or some other variables that were not tapped.

Parent Child Interaction Measure (PCIM)

It was planned to administer the PCIM to all program completed subjects but it was not available for the early waves pre-treatment. No findings are presented on child behaviors as the data were too scanty to analyze while pre-post data are limited to 51 dyads. Before presenting the data it is noted that question suggestions (#7) and nonquestion suggestions (#8) are broken down into more discrete categories in items 11-22. The data presented in tabular form are significant at the .05 level or below. A comparative listing of all variables is presented in Table 24.

Comparison of pre-training PCIMs of program completed subjects with post-training PCIMs of program completed subjects who had no pre-training PCIM.

Insert Table 22 about here

The findings presented in Table 22 (p. 97) revealed significant decreases in maternal behaviors at the post-test for the nonverbal intrusions, movement of objects (#2) and other intrusions (#4). As predicted there was a significant decrease in the time to administer the task (#5) at the post-test. Verbal interactions with significant decreases over time were nonquestion suggestions (#8), negative feedback (#10) and directives without information (#21). A significant increase in reported behavior was found only for the verbal interaction, reference to one dimension, three cues (#15).

Comparison of pre-training and post-training PCIMs for program completed subjects

Insert Table 23 about here

The data in Table 23 (p. 98) revealed significant differences along with decreased frequencies in behaviors at the post-test for the nonverbal intrusion, handing an object to the child (#3) and the following verbal interactions: nonquestion suggestions (#8), negative feedback (#10), teaching the class label (#17), naming a specific item or place in the box (#19), providing a specific solution with descriptive information (#20) and a directive with no information (#21). A significant increase was found for postive feedback (#9).

The findings at post-training PCIMs showed similar trends for parents with no previous experience with the interaction measure (Table 22) and those who had had the PCIM both pre- and post-treatment (Table 23). Significant differences at the post-test, in most instances, were related to decreased frequencies in parent behaviors. It was suspected that diminished behaviors post-treatment may have been connected with the maturation of the children since the program was carried out for approximately 6-8 months. Therefore, children with pre- and post-training PCIMs were categorized on age at the first IQ test using a repeated measures analysis of variance. Finally, subjects were categorized on sex as pre-post training IQ scores (Table 8) had revealed significant differences favoring the girls. Table 24 presents responses across analyses for items 1-22.

Insert Table 24 about here

When children were categorized on age significant differences in pre- and post-training test scores were found for only nonverbal intrusions, placement of objects (#1) and handing an object to the child (#3) and for verbal interactions, reference to structure of task involving two dimensions, three cues (#12) and teaching the class label (#17). Age related differences were significant for the following items: other nonverbal intrusions (#4), time (#5), number of mother's statements (#6), question suggestions (#7), reference to structure of task involving one cue (#13) and descriptive, reference to one cue (#16). Paternal behaviors decreased over time for items 4-7 with the youngest and oldest age groups; in contrast, increased behaviors were reported for the middle age group who had been treated similarly to the youngest group at the pre-test. Significant differences were found for both test scores and age for nonquestion suggestions (#8), positive feedback (#9), negative feedback (#10), descriptive, specific item only (#19), directive, a specific solution which contains some descriptive information about item (#20) and directive, a specific solution without information (#21). Nonquestion suggestions and negative feedback decreased at the post-test for both age and test scores, while positive feedback increased for the younger and middle age groups and remained the same for the oldest group. Differences in parent behaviors appeared to be age specific with decreases noted at the post-test for the youngest and oldest age groups while increases occurred for the middle age group. There was only one significant interaction for all variables analyzed, the nonverbal intrusion, movement of objects (#2). There were more maternal behaviors at the post-test for the middle age group and fewer for both younger and older children.

Significant differences related to sex were found for nonquestion suggestions (#8) and a directive which contains some descriptive information about the item (#20). There were significantly more behaviors directed toward the boys; however, significant decreases in behaviors at the post-training test were found for parents of both boys and girls.

Discussion

The PCIM, a semi-structured task, was expected to pick up differences in maternal behaviors pre- and post-training. Before the findings are discussed a brief description of the Parent Education Program is relevant. It emphasized the importance of the parent using rational explanations rather than imperatives while teaching her child the cognitive concepts inherent in the play activities. In addition, the use of positive reinforcement as a learning incentive was stressed.

The data to be discussed are for subjects with both pre- and post-training tests. Suggestions went from high information value, #11, to low information value, #22. A significant increase was found for positive feedback, #9, which indicates that parents applied the suggestion of using praise to encourage wanted behaviors. Further inspection of the data on positive feedback also revealed that increased praise at the post-test occurred only for the two younger age groups. There was essentially no difference between the pre- and post-test for the oldest age group. A significant decrease in negative feedback, #10, coupled with significant decreases in low information suggestions, #'s 19, 20 and 21, implied that program experiences may have taught parents what not to do. Earlier it was mentioned that children in the middle age group were the most difficult to test. It was of interest to find

that on the PCIM they consistently received more attention from their parents than children in the other two age groups. The response rate to this group was generally higher on both tests as compared with the youngest group. Even the decrease in maternal behaviors observed at the post-test tended to be less for the middle age group than for the other two groups of children. In contrast, there were significantly fewer maternal behaviors recorded for the oldest age group at both tests on a series of items which indicated that parents responses, in the population under study, were related to the age of their children.

There are other factors to consider in discussing the use of the PCIM as an assessment of an intervention program mediated through the parent. First, PCIM categories were theoretical and were not related to the context of the task. Second, children mature over time, and marked behavioral changes take place between the second and third year. It is possible that the child's increased maturity may have led to changes in the parent's style of teaching along with their experiences in the program. Third, the parent and child were more relaxed at the post-training test, particularly, those who had had the PCIM pre-training. This may have caused parents to use shortcuts and teaching styles that were more individually oriented rather then follow the demonstrator's guidelines as many did at the pre-training PCIM. Fourth, the breakdown of items 7 and 8 into more discrete categories in items 9-22 probably increased the expected variability and may partially explain the large standard deviations.

It appears that the PCIM which was scored quantitatively did not get at qualitative issues that may have been more reflective of the parent training

such as the mother's increased awareness of her ability to teach her child. The scoring guidelines were derived from a task performed once, whereas, in this study the toy sorting task was administered two times. Under these conditions, the expected imitation of the experimenter's instructions to the parent should have been controlled by the scoring procedures. As discussed above, at the initial testing parents closely imitated the experimenter's teaching style while at the post-training test their behaviors were more innovative. The elimination of variables directly related to demonstration of the task and the retention of items that tapped program connected outcomes, such as, positive and negative reinforcement, would make the PCIM a more valid measure of the treatment variable. Further study would be required to determine if the age related behaviors reported were particular to this population. In summary, it appears that the theoretical orientation of the PCIM did not measure certain maternal behaviors that appeared to be a valuable by-product of the Parent Education Program. Specifically, these behaviors reflected the parent's changing view of her role to include "child-educator" which emanated from her increased knowledge about affective as well as cognitive behaviors.

Parent attitude measures

A preliminary study of parent attitudes was carried out with the program completed parents and a similar population in the prenatal clinic of the Mount Sinai Hospital. The semistructured interview forms were not quantifiable. Nevertheless, certain trends came to the fore that are worth mentioning.

Expectant mothers waiting to see the doctor answered an open ended questionnaire about the baby. They reported that the most important needs of the new baby were emotional security which included love and understanding

followed by physical care such as food, clothing, a clean home and good health. Learning was seen as a self initiated activity in which the baby watched and imitated others. The primary teacher of the baby was the family and then the mother. This appeared to downgrade the important role of the latter who has a major impact on mental growth. Learning was viewed as a vertical rather than an interactive process in which family members act while the infant observes, imitates and learns. In describing the baby's skills, physical activities such as crawling and walking were mentioned most frequently. Next came social skills such as smiling and laughing. Their responses suggested that the majority of expectant mothers did not link physical and social growth with the concurrent development of the intellect.

Parents returned an open ended questionnaire at the first post-training evaluation. Most parents said that they joined the program to help their children to learn and to prepare them for school while some reported that they joined simply because they were asked to do so and indicated that they had no particular notion of what outcomes were expected. Perhaps, the latter response was related to the positive image of the health facility leading some parents to assume that a program based in the clinic would be of value to their children. In rating the impact of the program on their children they most frequently mentioned the acquisition of new skills, such as color and object labeling, aptitudes which came directly from program activities. Spanish speaking parents who tended to be more expressive wrote that the program "awakened the child's mind." Next, behavioral changes were reported that included getting along better with other children and following instructions. It is possible that the parent's increased knowledge of expected behaviors altered her view of her child and was instrumental in her feeling that he now behaved better. Suggestions for changing the format of

the program included requests for additional training and more parent-child observation sessions. The latter request was of particular interest since the observation sessions were deliberately limited because we did not want parents to feel they were being checked on. However, they indicated that they did want more guidance. Finally, parents said that the teaching methods learned during the training sessions had helped them to work more effectively with their children. The program experiences had also made them aware that young children can learn a variety of concepts before they entered school.

At the post-post training evaluation parents were asked to answer an additional set of questions that dealt with child rearing practices and their notions about child development. Most parents reported that children started to learn at about 1-1½ years of age because adults began to teach them at that time. This supports the findings from the prenatal population that parents did not connect learning with the behaviors occurring in the baby's first days of life. It also suggests that the prenatal period may be a suitable time to teach parents about early development to permit them to take advantage of their role as "mother-teacher" starting with the neonate. Parents used praise from birth-1½ years of age while disciplinary measures were instituted later at 1-2½ years of age, the period when the child becomes more independent and assertive. Girls of both ethnic groups were praised earlier and received more praise than boys. Behaviors that elicited praise for both sexes were cognitive skills, helping in the house and self care, in that order. The trends presented suggested that parents could use information about alternative ways to handle children since some parents reported that they had punished their babies in the first months of life. For example, many parents did not allow children to talk at meal time although this was often the only time the family was together. A frequent complaint heard was that children touched and broke delicate objects. One option available in dealing

with this problem is to child proof the home so that the caregiver can save her energy for positive activities instead of restricting the child. When discussing ways to prepare children for school most parents said that the child must respect the teacher and behave in the classroom. Some added that they would tell the child about school routines while others mentioned the need to prepare the child at home so he could handle school activities with ease.

The comments suggested that parents were able to utilize skill training to aid their children's performance and equally important to gain a sense of efficacy in their role as the first teacher. A written response from Mrs. M. who said, "Kids don't learn so fast and even if they're wrong it is alright," illustrates this. That brief statements covers a host of ideas. Children learn differently from adults. It is important to encourage them to want to learn rather than to emphasize the right answer. Implied is a need for patience to handle the unique way the young child deals with the world in his effort to understand it.

Socialization as a factor in parent participation

The importance of the social aspects of the program to the parents, exclusive of the needs of their children, was demonstrated by their consistently high attendance at the party-meetings held when they finished the training. The response rate ranged from 60-90% on both sites and was independent of the weather. Parents looked forward to these events and to the diplomas they received for their achievement. Initially, no diplomas were given but at the suggestion of the playroom assistants they were prepared. There was no question that this piece of paper meant a great deal to the parents and even those who did not attend came back to get the diploma. Ten to 12 participants were invited as space was limited and each guest brought 2-4 people including children, husbands, relatives and friends. At the meeting they were invited to give suggestions about the future course of the program. The security of the

the peer group often led to frank comments that were not elicited in a one-to-one situation.

Parents in urban ghettos are sometimes isolated in their apartments leading to a limited social life. The findings suggest that the intervention model based in the pediatric clinic was used to develop informal social networks with other adults in the community who would otherwise remain strangers. Furthermore, it is possible that the social opportunties, inherent in the clinic setting were a positive factor that enticed parents to enter as well as to complete the training.

The need for a visual model when recruiting for an intervention program

Interviewers began to recruit parents for the Parent Education Program at the East Harlem Child Health Station before the play area opened. The response was very poor. However, when the playroom was set up adults in the waiting room were able to observe staff members working with children and could evaluate the service being offered. Shortly thereafter, the rate of positive responses was similar to that at Mount Sinai Hospital. It was apparent that the visual model demonstrated the theoretical basis of the program, that is, play was a valuable learning experience. The program was quickly accepted as a valid service which facilitated recruitment so that 3 months after the play area was installed the parent education component was underway.

Effect of the ecology of the environment on the Parent Education Program

The influence of the physical setting on administering the program was assessed in 3 models: (1) a separated playroom in a pediatric clinic, Figure 1; (2) an open playroom in the waiting area of a well baby clinic, Figure 2; (3) an open playroom in a prenatal clinic, Figure 3.

Insert Figure 1 about here

The exclusiveness of the separated playroom, Figure 1, limited dissemination about the program due to its restricted contact with the community. Even after 3 years of service in this setting the staff had to continue to invite parents into the playroom. Because young children could not maintain eye contact with their parents it was less frequently used by toddlers who were a primary concern of the Parent Education Program.

Insert Figure 2 about here

In contrast, in the open play areas, Figures 2 and 3, very young children came in because they could see their parents while they were playing. Parents, in the population under study, were often timid about entering either play areas. However, the ambience of the open playroom appeared to be more congenial than that of the separated playroom since after observing the ongoing program many entered voluntarily and then helped their children with play activities. The ensuing dialogue between parents and staff members as well as observations of parents in training often led to voluntary requests for program entry.

The response of parents to two models, one separated the other open, revealed that the physical structure of the playroom partially controlled its function. The increased visability of the open playroom gave it a natural interface with the waiting parents. It was a more effective setting for program dissemination than the separated playroom as evidenced by a higher rate of voluntary requests for program participation over time. Parents who were not program participants also used it as an educational resource to gain information about play activities and child behaviors. Finally, it was more efficient in its use of staff, space and materials.

Insert Figure 3 about here

Prenatal clinic as site for an early intervention program

Nurses in the prenatal clinic asked the project staff to set up a play program in their clinic to provide waiting children with supervised play activities while their mothers were undergoing physical examinations. We were interested in assessing the validity of using the prenatal population as a source for volunteers for the Parent Education Program. The prenatal play program was limited in scope as it was staffed by volunteers who were supervised by project staff. The physical layout is presented in Figure 3.

The service was highly utilized. It was found that the pregnant women perceived the staff as teachers and asked them many questions about child rearing, especially about the effect of the baby-to-be on the toddler. They were also concerned about play activities to use at home and where to apply for nursery programs. These interchanges led naturally to a discussion of the Parent Education Program.

The prenatal clinic was an excellent site for recruitment for the program. Since pregnancy is a healthy state the women were approachable and interested in hearing about the program. They kept regular appointments at the prenatal clinic and could easily manage to combine 2 appointments in one visit to the medical center. It was observed that primaparas came by to observe the children playing. It is suggested that they might be optimum recruits for a cognitively oriented intervention program since the diffusion from the mother's program experiences would be multiplied when applied to later born children. Maternity and Infant Care Projects may be potentially good sites for carrying out all aspects of an early intervention pro-

gram since they provide prenatal care and also follow the infant through the first year of life.

Group teaching vis a vis individual teaching sessions

Parents who completed the program asked for additional instruction. A pilot program that used a group format was planned as an extension to the base program. Parents agreed to accept group teaching, if the educational model was maintained, but rejected any kind of "group therapy" which was never offered. Group sessions, rather than individual teaching, were used because parents had learned to keept appointments, group teaching was more economical and finally, it was expected that the group would give members an opportunity to socialized with others from the community who might provide needed support in the future. The Extended Parent Education Program (Morris, 1977) was made up of 6 sessions that were held once a month for 6-8 parents. Teaching methods were similar to those in the base program; however, each meeting started with a short discussion of the previous exercise which included a general review of related developmental issues. The group leader then demonstrated the teaching method with a parent volunteer. Afterwards, parents worked in teams of two, under the supervision of the group leader and a bilingual playroom assistant.

The group was an effective educational tool. In spite of their disclaimers parents wanted to discuss other aspects of development as well as those specific to learning. When talking about social and emotional changes with others they became aware of the continuous and expected growth that occurs in young children. This allowed them to see change as normative rather than as a manifestation of behavioral problems. The group was an effective vehicle for a cognitively oriented intervention program. It requires further evaluation to see if it could be used as the primary teaching method in a clinic based program.

Conclusions

Summary

The validity of using the medical facility to conduct an educational intervention program for parents of preschoolers was examined under two conditions, usage by parents in the community and benefits to their children.

Five hundred and eighteen mother-child dyads from Black and Hispanic families were recruited in a pediatric clinic in a university medical center and a child health station run by the New York City Department of Health for a 12 session cognitively oriented Parent Education Program. Both clinics served low income families which included the working poor as well as welfare recipients.

All parents of children ages 20-39 months were eligible to participate. Two modes of approach were used. In Mode One, the interview and the IQ testing of the child were separated in time; both were administered at the initial contact for Mode Two subjects. Children were then matched on age, sex and ethnicity and randomly assigned to early and late entry groups. The early group entered the program immediately; the late group started 6-8 months later.

A preliminary analysis of initial IQ scores for the total sample revealed a significant main effect for ethnicity with mean IQs favoring the Black children and the late group. No differences were found for sex, age, mode of approach and the early entrants. At the second testing, prior to program entry, there were no differences found for the late group.

The impact of the treatment program was measured by the Cattell and Stanford-Binet administered pre- and post-treatment to the Program Completed subjects (n = 147). The early treated children showed significant gains in performance relative to the untreated late group. A subsequent

analysis of pre- and post-treatment scores for both groups yielded similar results. In contrast to the findings for the total population no ethnic differences occurred in the Program Completed sample; however, there were sex differences as females scored higher on the initial IQ test and maintained their advantage post-treatment. The early entrants maintained gains longer than the late entrants on post-post training tests, while gains for both groups were attenuated 6-18 months post-program.

Demographic and personal variables were inspected to obtain a profile of a parent most likely to complete the program. The composition of the population appeared to influence program status. Parents most likely to be in the Program Completed group were bilingual or Spanish speaking and born outside of New York City. Additional predictors of program status were age of parent and age of child. The design variables of mode of approach and time of entry were better discriminators than the demographic variables analyzed. Predictions made prior to the study were supported in that more Mode One subjects and early entrants completed the training. Thirty two percent (n = 168) of the total population were in the Program Completed group.

Clinical observations at training sessions, parent-child observations and post-training comments indicated that a major effect of the program was to change the parent's view of her role which now expanded to include teaching as part of caregiving.

Conclusions

The results of this study indicated that low income parents who completed a brief cognitively oriented intervention program could effect gains in performance on IQ tests by their 2-3 year old children. Equally important parents gained a sense of effectiveness regarding their ability

to teach their children although their own education was often limited.

The goal of the program was to apprise the caregiver of her importance in supporting normal mental development before school entrance. Initially, it appeared that parents were not aware of exactly when and how learning begins and the value of the dialogue between mother and child that helps learning to flourish. However, even in this limited program of 12 sessions, they picked up these concepts quickly and used them effectively. The concrete play activities, used for teaching, led to observable behaviors that delineated cognitive aspects of growth, however, information about social and emotional development, which are oftentimes more subtle, was also embedded in the curriculum.

The design variables used in this study have implications for investigators working in natural settings since they permitted a research study to be carried out in the context of a service program that was available to all members in a large population who met the age guidelines. Both the mode of approach and time of entry appeared to screen out those persons who were not truly interested in entering the program. Mode One subjects, who kept the evaluation appointment, had had an opportunity to make a decision outside the constraints of the medical facility which quite likely reflected their true sentiments as opposed to Mode Two's who agreed to take part in the program when the child was tested at the initial contact but who made a candid decision about participation after they left the clinics. Early entrants, who started without delay, had their interest reinforced immediately, whereas, late entrants had to maintain enthusiasm for a relatively long waiting period.

Recommendations

It was expected that some parents would need additional information to deal with the continuous changes that occur in young children. Local agencies, such as Head Start and daycare centers, were not equipped to offer this kind of guidance. It may be of interest in a future study to construct a model network of educational intervention services that are linked with established agencies that serve children from birth to school entrance. This would provide a means of determining what particular manner of intervention service is needed at different stages of early development.

Many questions remain. First, what is the optimum site within the medical facility to introduce an educational intervention program to parents? Second, what is the best time, in terms of the child's age, to recruit parents for such a program? Third, how long should educational intervention continue? For example, women attend the prenatal clinic regularly for about 7 months. This may be a prime site to enroll the mother-to-be to prepare her to assist her future child, e.g. starting in the first months of life, in reaching his full intellectual potential. Longitudinal data from intervention studies by Gordon, Weikart and others is being collected and may provide some answers to the third question. Because of individual differences there may be no firm answers to the above questions. However, trends may be projected that would aid administrators and legislators in planning public policy.

Finally, it is suggested that parent-child observations should precede each teaching session. Participants had requested more observations and additional examinations would give them the support they wanted while allowing the staff to monitor the training more consistently.

Appendix

INITIAL CONTACT WITH PARENTS

Name of child: I.D. #

Today's date: Birth date: Age in months:

Birthplace: NYC = 1; South = 2; Puerto Rico = 4; Other = 4(specify)

Born in hospital: yes = 1; no = 0 Name of hospital:

Name of parent: Name on mailbox:

Address Apt. # Zip code: Telephone #

Place of interview: Clinic = 1; Emergency rm. = 2; EHCHS = 3; Prenatal = 4

Distance from institution: Walking = 1; Less than ½ hr public transportation = 2;
More than ½ hour public transportation = 3

Language: Eng. = 1; Span. = 2; Eng/Span = 3; Other = 4(specify)

Parent

Child

Interview

Home

Birth order: 1st born = 1; 2nd born =2; etc.

Number of other children: Male = 1; Female = 2

Sex Age in yrs. Sex Age in years (list oldest to young

Date of evaluation:

Kept evaluation appointment: Show = 1; No show = 0; Int./Eval. simultaneous = 3

Age at time of evaluation (in months):

Sex: Male = 1; Female = 2

Ethnicity: Spanish = 1; Black = 2; Other = 3(specify)

Mode: 1, 2, 4

Group assignment: Early = 1; Late = 2

Interviewer: (comments on back)

PARENT INTERVIEW

Interviewer: Today's date:

Name of child: I.D. #

Name of parent: Birthdate of parent:

Age of parent: (years) (months)

Birthplace of parent: NYC = 1; South = 2; Puerto Rico = 3; Other = 4 (specify)

Length of time in New York City:

Location of school: NYC = 1; South = 2; Puerto Rico = 3; Other = 4 (specify)

Last grade completed:

How long have you lived at your present address:

Housing: Public = 1; Private = 2

Number of rooms reported:

Who takes care of your child during the day? Mother = 1; Relative or friend = 2; Daycare = 3; Other = 4 (specify)

Television: yes = 1; no = 2

Kind: black and white = 1; color = 2

CHILD

Total number of hours t.v. watched:

PARENT

Total number of hours t.v. watched:

Preferred language: English = 1; Spanish = 2; Eng./Span. = 3

Preferred programs (child):

Watches Sesame Street: Never = 1; Sometimes = 2; Regularly = 3

Preferred programs (parent):

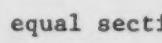
(Score in catagories as listed: yes = 1; no = 2)

Quiz shows	Mystery
News	Medical
Variety	Movies
Comedy	Soap Opera

PARENT CHILD INTERACTION MEASURE (PCIM)

TOY SORTING TASK:

Materials:

Nine toys and a partitioned box are used for this task. The box is divided into three equal sections by separators, (). The division of the box into three sections serves to emphasize the distinctiveness of the three groups to be formed later. The three types of objects were selected because they were assumed to be familiar to all the children. The toys are: three plastic cars, three small chairs (dollhouse furniture), three plastic picnic spoons. Among each type of toy (cars, chairs, spoons), one is red, one yellow, and one green. Thus the nine toys can be sorted into three groups in either of two ways: by color (red toys, green toys, yellow toys) or by object (cars, chairs, spoons).

Procedure:

The two sorting methods are taught to the mother while the child is out of the room. The specific instructions follow:

(Begin with the box empty, and the toys in random order on the table.)

1) HERE ARE SOME TOYS. THERE ARE DIFFERENT WAYS THEY CAN BE PUT TOGETHER ON THE BOARD.

   (Sort by object) THESE GO TOGETHER BECAUSE THEY'RE ALL. . . (pause). (Point to each group and elicit answer: spoons, chairs, trucks (cars).)

2) THE TOYS CAN BE PUT TOGETHER IN ANOTHER WAY, TOO. (take toys off board)

   (Sort by color: random placement within each section) THESE GO TOGETHER BECAUSE THEY'RE ALL. . . (pause). (Point to each red, yellow, green)

SCORING PROCEDURES FOR PCIM

Verbalization by parent during task:

1. Nonquestion suggestion: A statement indicating what the mother wants the child to do next (e.g., "Find a yellow one like this.")
2. Question suggestion: Suggestion, as above, but stated in interrogative form (e.g., "Where does this yellow one go?")
3. Positive feedback: An expression of approval about what the child has already done, or general approval of the child (e.g., "Good.")
4. Negative feedback: An expression of disapproval about what the child has alread done, or general disapproval of the child (e.g., "That's not too good.")
5. Total interaction: number of statements/minute.

Suggestions from parent during task:

6. Level 1: Orienting suggestions, focusing strategies, suggestions that restrict the attention to some major segment of the task (e.g., "Look at the cars," "Let's start with the cars.")
7. Level 2: Suggestions about specific pieces, or specific locations in the box but not both (e.g., "Find a yellow one like this.")
8. Level 3: Solutions. Suggestions indicating both which piece was to be used and where it was to be placed (e.g., "Put that one over here.")

Analysis of the mother's speech, based on transcriptions:

1. Quantity of speech: total number of words spoken.
2. Mean sentence length: total number of words divided by the total number of complete sentences.

Orienting - mention class and task.

1. Reference to structure of task involving 2 dimensions, 3 cues. "We will sort by objects - spoons, airplanes and chairs, and color - red, yellow, green."
2. Reference to structure of task involving 1 dimension, 3 cues. "Let's put all the colors together (the reds, the yellows, the greens")

SCORING PROCEDURES FOR PCIM (cont.)

3. Reference to structure of task involving 1 cue.

"Let's put all the yellows together."

Specific I - mention class only.

4. 2 dimensions, 3 cues.

"These are the object groups - spoons, airplanes and chairs - and these are the colors - red, yellow, green." or "Find me. . . ."

5. 1 dimension, 3 cues.

"Find me the objects - all the spoons, the airplanes and the chairs."

"These are the objects - all the spoons, the airplanes and the chiars."

6. 1 cue.

"Look for all the spoons."

"Look for all the yellows."

"These are all the spoons." Be careful (see7)

Specific II

7. Teaching the class label.

"These are the red ones."

"These are all the spoons."

8. Teaching what sorting is.

"Look, I am putting these into groups."

"See, I put them all together."

9. Item or a specific place in box (over there)

"This is a red one." (7)

"Find the airplane."

Solution - directive - mention thing and place.

10. Solution with information

"Put the red one over here."

"Put the spoon in the left box."

11. Solution with no information

"Put it here."

SCORING PROCEDURES FOR PCIM (cont.)

Task analysis

Mother's suggestions may vary along three linear measurements:

a. Bi-dimensional* vs. uni-dimensional

bi-dimensional

i.e. "we'll sort by colors and by objects"

uni-dimensional

i.e. "we'll sort by colors"

"let's start with the airplanes"

"this is red"

b. Mention of dimensionality vs. non-dimensionality

dimensional

i.e. "find a red airplane"

"put the spoons together"

non-dimensional

i.e. "put it over here"

"find it for me"

c. Class properties vs. item properties

class

i.e. "put the yellow ones here"

"those are all the spoons"

item

i.e. "this is red"

"put the spoon there"

Can score according to amount of conceptual information as well as directiveness.

*Dimensions are: 1. colors - reds, greens, yellows

2. objects - planes, spoons, chairs

PARENT-CHILD INTERACTION MEASURE

Date administered by I.D. #

Mother's nonverbal intrusions during PCIM

1. Placement of object (frequency)
2. Movement of object (frequency)
3. Handing an object to child (frequency)
4. Other (pointing, gesturing) (frequency)
5. Mother's verbal interaction during PCIM
6. Total time of parent-child interaction (in minutes)

Total number of mother's statements

7. Question suggestions (open-ended suggestions which elicit information and/or placement response from child)
8. Nonquestion suggestions (declarative suggestions which are informative and/or directive)
9. Positive feedback (frequency)
10. Negative feedback (frequency)

Mother's verbal interaction: classification of suggestions (not all are classifiable)

11. Suggestion 1 (Orienting, reference to structure of task involving two dimensions, three cues)
12. Suggestion 2 (Orienting, reference to structure of task involving one dimension, three cues)
13. Suggestion 3 (Orienting, reference to structure of task involving one cue)
14. Suggestion 4 (Descriptive, reference to two dimensions, three cues)

Child's age at PCIM, in months

Language used for PCIM: 1 = Spanish; 2 = English; 3 = Spanish/English

PARENT CHILD INTERACTION MEASURE (cont.)

15. Suggestion 5 (Descriptive, reference to one dimension, three cues)
16. Suggestion 6 (Descriptive, reference to one cue)
17. Suggestion 7 (Teaching the class label — i.e., orienting to the dimension and teaching the name of each cue)
18. Suggestion 8 (Teaching what sorting is -- how and why to group
19. Suggestion 9 (Descriptive, specific item only or one specific place in box)
20. Suggestion 10 (Directive, a specific solution which contains some descriptive information about item)
21. Suggestion 11 (Directive, a specific solution without information)
22. Suggestion 3-11 (Orienting and directive, reference to class by pronoun only)

Child's verbalizations

23. (I) Involvement (comprehensive tally of all child's verbalizations which indicate involvement in and attention to the task, in any form)
24. (N) Noninvolvement (comprehensive tally of all child's verbalizations which indicate noninvolvement in and inattention to the task)

Child's verbalizations: classification of levels of understanding

25. (A) Initiating (verbalization indicating appropriate participation independent of mother's suggestions)
26. (B) Asking for more specific information (when child's question reflects a basic understanding of the task, but mother has been too vague)
27. (Cq) Following directions of mother, when she asks a question and child must supply the missing information
28. (Cs) Following directions of mother, when she has made a completely informative directive
29. (D) Displaying confusion (related in content to mother's previous directive)
30. (E) Repeating all or part of mother's suggestion
31. (F) Noninvolvement: interest in objects apart from doing task
32. (G) Noninvolvement: rejecting suggestions and help from mother

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Table 1

Frequency of Subjects Classified by Sex, Ethnicity and Program Status

	*Program Completed	**Drop Out	***No Show	Lost Contact	Total
Spanish F.	60	50	58	6	174
Spanish M.	70	45	75	8	198
Black F.	17	16	28	5	66
Black M.	21	14	39	6	80
Total	168	125	200	25	518

IQ data for the following subjects were not included in the statistical analysis:

* 4 siblings who were trained after the target child and had no pretest.

6 subjects whose test one or two were invalid were not included in the pre-post treatment analysis.

11 subjects who were overage or had physical and/or emotional problems.

These included spina bifida, speech, hearing or visual deficits and emotional disturbances requiring therapeutic intervention.

** 6 children, first test was invalid.

*** 5 children, first test was invalid.

Table 2

Percent of Total Sample and Program Completed

Subjects Classified by Sex and Ethnic Variables

	Spanish	Black	Female	Male
Total Sample	72%(372)	28%(146)	46%(240)	54%(278)
Program Completed	77%(130)	23%(38)	46%(77)	54%(91)

Table 3

Two Way Analysis of Variance on Initial IQ Scores for the Total Sample Classified on Sex and Ethnicity

Source	df	MS	F	p
Ethnicity	1	1021.56	6.341	.01
Sex	1	158.31	.983	NS
Ethnicity x Sex	1	34.85	.216	NS
Within	471	161.10		

	Mean	SD	n
Spanish	94.46	12.82	339
Black	97.65	12.09	136

Table 4

One Way Analysis of Variance on Initial IQ Scores for the Late Entrants Classified on Program Status

Source	df	MS	F	p
Program Status	2	515.50	3.36	.05
Within	206	153.55		

	Mean	SD	n
Program Completed	94.51	12.20	43
Drop Outs	99.73	14.68	44
No Shows	94.20	11.53	122

Table 5

Repeated Measures Analysis of Variance on IQ 1 and IQ 2 (Post-Treatment, Early Group; Pre-Treatment, Late Group) for Program Completed Subjects

Source	df	MS	F	p
Entry	1	1101.81	6.07	.015
Error	145	181.44		
Tests	1	785.38	11.72	.001
Test x Entry	1	444.60	6.63	.011
Error	145	67.01		

Group	Test	Mean	SD	n
Early	1	94.57	10.98	106
	2	100.96	11.34	106
Late	1	93.00	11.82	41
	2	93.90	10.33	41

Table 6

Repeated Measures Analysis of Variance on Pre-Training IQ Scores (IQ 1/Early; IQ 2/Late) and Post-Training Scores (IQ 2/Early; IQ 3/Late) for Program Completed Subjects

Source	df	MS	F	p
Entry	1	62.02	.33	NS
Error	145	185.12		
Tests	1	2153.39	34.28	.0001
Tests x Entry	1	7.32	.12	NS
Error	145	62.81		

Group	Test	Mean	SD	n
Early	1	94.57	10.98	106
	2	100.96	11.34	106
Late	2	93.90	10.33	41
	3	99.58	11.74	41

Table 7

Repeated Measures Analysis of Variance on Pre-Training and Post-Training IQ Scores for Program Completed Subjects Categorized on Ethnicity

Source	df	MS	F	p
Ethnicity	1	351.41	1.92	NS
Error	145	183.13		
Tests	1	1863.05	29.71	.0001
Tests x Ethnicity	1	23.65	.38	NS
Error	145	62.70		

Group	Test	Mean	SD	n
Spanish	1	93.60	10.77	111
	2	100.12	11.86	111
Black	1	96.80	10.58	36
	2	102.00	10.00	36

Table 8

Repeated Measures Analysis of Variance on Pre-Training and Post-Training IQ Scores for Program Completed Subjects Categorized on Sex

Source	df	MS	F	
Sex	1	1572.40	9.00	.003
Error	145	174.71		
Tests	1	2850.80	45.58	.0001
Tests x Sex	1	47.30	.76	NS
Error	145	62.54		

Group	Test	Mean	SD	n
Female	1	96.42	10.85	69
	2	103.46	11.76	69
Male	1	92.59	10.45	78
	2	98.02	10.56	78

Table 9

Analysis of Covariance with Pre-Training IQ Scores as the Covariate and Post-Training IQ Scores as the Dependent Variable with Program Completed Subjects Categorized on Sex

Source	df	MS	F	p
Post-test on Sex	1	5276.34	45.53	.0001
Pre-test on Sex	1	444.32	4.58	.034
Adjusted Means	1	4029.23	41.57	.0001

Adjusted Cell Means for Post Test

Male	Female
98.92	102.46

Table 10

Repeated Measures Analysis of Variance on Post-Training (IQ 2/IQ 3) and Post-Post Training IQ Scores (IQ 3/IQ 4) of Early and Late Entrants

Source	df	MS	F	p
Entry	1	737.65	3.01	.085
Error	112	244.96		
Tests	1	252.11	5.32	.023
Tests x Entry	1	86.36	1.83	
Error	112	47.36		

Group	Test	Mean	SD	n
Earyl	2	102.11	10.97	80
	3	101.16	12.95	80
Late	3	99.53	11.20	34
	4	95.88	13.30	34

Table 11

Response Rates, Means and Standard Deviations on Post-Post-Training IQ Tests for Early and Late Subjects

Group	Test	Mean	SD	n	Percent of Total Total n	n
Early	3	101.16	12.95	80	80%	106
	4	100.53	11.38	56	53%	106
	5	100.25	12.10	27	27%	106
Late	4	95.88	13.30	34	83%	41
	5	97.20	13.53	24	58%	41

Table 12

Chi Square Analysis: Age of Child at Initial IQ Test and Program Status

Age (Mos.)	PC	DO	NS	Total
17-30	88 (92.65)	80 (70.99)	126 (132.35)	296
31-36	41 (36.93)	16 (28.30)	61 (52.76)	118
37+	25 (24.41)	20 (18.70)	33 (34.87)	76
Total	154	118	220	492

$X^2 = 9.532$, $df = 4$, $p = .05$

Table 13

Demographic Variables that were not Significant in Relationship to Program Status

Variable	X^2	df	p
Sex of child	2.96	2	.227
Ethnicity of child	4.83	2	.089
Birth order of child	7.92	10	.637
Number of other children	8.70	6	.190
Birthplace of child*	3.28	4	.514
Born in hospital**	2.50	3	.477
Place of interview	6.80	6	.339
Distance from institution	8.35	4	.078

* 479 out of 517 children were born in New York City.

** 464 out of 466 children were born in hospitals.

Table 14

One Way Analysis of Variance on Program Status and Mean Age of Parents

Source	df	MS	F	p
Between: Program Status	3	254.16	4.659	.004
Within	443	54.54		

	Mean Age	SD	n
Program Completed	29.654	8.948	142
Drop Outs	27.223	6.561	112
No Shows	26.976	6.663	171
Lost Contact	25.454	4.153	22

Table 15

Chi Square Analysis: Birthplace of Parent and Program Status

	PC	DO	NS	Total
New York City	26	33	66	125
	(39.34)	(31.57)	(54.09)	
South	20	9	34	63
	(19.83)	(15.91)	(27.26)	
Puerto Rico	89	67	86	242
	(76.16)	(61.13)	(104.72)	
Other	17	13	23	53
	(16.68)	(13.39)	(22.93)	
Total	152	122	209	483

$X^2 = 17.81$, $df = 6$, $p = .006$

Table 16

Personal Variables that were not Significant

In Relationship to Program Status

Variable	X^2	df	p
Length of time in New York City*	13.04	12	.365
Location of school**	5.55	9	.785
Last grade completed***	23.71	18	.164
Kind of housing, public or private****	1.09	3	.782
Number of rooms in home	14.96	21	.826
Caretaker of child during the day	2.92	4	.574
Television*****	5.37	3	.144
Kind of television	2.63	2	.268
Total number of hours of television watched by child	1.02	6	.983
Total number of hours of television watched by parent	10.20	6	.115
Preferred language on television	6.80	4	.145
Child watches Sesame Street	5.60	6	.470
Preferred programs of parent			
Quiz shows	.20	3	.972
News	.30	3	.955
Variety	1.93	3	.591
Comedy	5.95	3	.112
Mystery	4.40	3	.219

Table 16 (continued)

Medical	.89	3	.829
Movies	1.98	3	.580
Soap operas	4.09	3	.250

* 220 (n = 487) in New York City less than 3 years.

** 237 attended school in New York City, 122 in Puerto Rico (n = 436).

*** 386 completed eighth grade or higher (n = 442).

**** 285 lived in private housing (n = 448).

***** 450 owned television set (n = 459).

Table 17

Chi Square Analysis: Language of Parent and Two Levels of Program Status

	PC	DO	NS	Total
English	44	32	91	167
	(51.98)	(40.91)	(74.11)	
Spanish	111	90	130	331
Span./Eng.	(103.02)	(81.09)	(146.89)	
Total	135	122	221	498

$X^2 = 10.42$, $df = 2$, $p = .005$

Table 18

Chi Square Analysis: Language of Child and Program Status

	PC	DO	NS	Total
English	48	34	96	178
	(55.63)	(43.06)	(79.31)	
Spanish	56	36	63	155
	(48.44)	(37.50)	(69.06)	
Spanish/	51	50	62	163
English	(50.94)	(39.44)	(72.63)	
Total	135	120	221	496

$X^2 = 12.43$, $df = 4$, $p = .014$

Table 19

Chi Square Analysis: Language Spoken in the Home and Program Status

	PC	DO	NS	Total
English	47	36	95	178
	(55.63)	(43.06)	(79.31)	
Spanish	60	36	62	158
	(49.38)	(38.23)	(70.40)	
Spanish/	48	48	64	160
English	(50.00)	(38.71)	(71.29)	
Total	155	120	221	496

$X^2 = 11.84$, $df = 4$, $p = .018$

Table 20

Chi Square Analysis: Mode of Entry and Program Status

	PC	DO	NS	LC	Total
Mode One *	70	48	65	8	191
	(59.39)	(45.74)	(75.84)	(10.03)	
Mode Two **	60	49	119	17	245
	(76.18)	(56.68)	(97.28)	(12.87)	
Mode Four***	18	17	5	0	40
	(12.44)	(9.58)	(15.88)	(2.10)	
Total	148	114	189	25	476

$X^2 = 32.59$, $df = 6$, $p = .001$

* = Mode One, interview and evaluation separated in time.

** = Mode Two, interview and evaluation on the same day.

*** = Mode Four, volunteered for program without recruitment, inducted under Mode One conditions.

Table 21

Chi Square Analysis: Time of Entry and Program Status

	PC	DO	NS	Total
Early*	108	74	98	280
	(86.88)	(67.51)	(125.62)	
Late	40	41	116	197
	(61.12)	(47.49)	(88.38)	
Total	148	115	214	477

$X^2 = 28.53$, $df = 2$, $p = .001$

*Mode 4 clients (volunteers) were all "early" entrants.

Table 22

Analysis of Variance on Pre-Training PCIM for Program Completed Subjects (n = 84) and Post-Training PCIM for Program Completed Subjects (n = 26) Who had No Pre-Training PCIM

Source					Pre-Training PCIM		Post-Training PCIM	
Test Item	df	MS	F	p	Mean	SD	Mean	SD
2. Mother's nonverbal intrusions, movement of object.	1/108	52.28/7.97	6.56	.01	2.74	3.12	1.11	1.28
4. Mother's other nonverbal intrusions, e.g. pointing, gesturing.	1/108	246.92/26.54	9.30	.003	7.49	5.38	3.96	4.07
5. Total time.	1/108	27.07/5.89	4.59	.03	4.75	2.54	3.58	1.90
8. Mother's verbal interaction, nonquestion suggestions.	1/108	1920.25/521.97	3.68	.05	41.99	22.31	32.15	23.67
10. Mother's verbal interaction, negative feedback.	1/108	159.90/41.28	3.87	.05	8.61	6.61	5.77	5.48
15. Mother's verbal interaction, suggestion 5, descriptive, reference to one dimension, three cues.	1/108	97.67/14.89	6.56	.01	2.17	3.79	4.38	3.91
21. Mother's verbal interaction, suggestion 11, directive, a specific solution without information.	1/108	329.95/35.78	9.22	.003	6.83	6.28	2.81	4.64

Matched Two Tail T-Tests on Pre- and Post-Training PCIM for Program Completed Subjects (n = 51)

Test Item	df	t	p	Pre-Training PCIM Mean	Pre-Training PCIM SD	Post-Training PCIM Mean	Post-Training PCIM SD
3. Mother's nonverbal instructions, handing an object to child.	50	3.49	.001	1.39	2.50	0.14	0.40
8. Mother's verbal interaction, nonquestion suggestions.	50	2.69	.01	44.31	25.99	34.23	19.91
9. Mother's verbal interaction, positive feedback.	50	2.08	.04	10.23	6.92	12.51	8.38
10. Mother's verbal interaction, negative feedback.	50	2.23	.03	8.98	7.16	6.53	5.92
12. Mother's verbal interaction, suggestion 2, orienting, reference to structure of task involving one dimension, three cues.	50	2.26	.03	.65	1.23	1.29	1.95
17. Mother's verbal interaction, suggestion 7, teaching the class label.	50	2.47	.01	3.70	5.59	1.69	2.72
19. Mother's verbal interaction, suggestion 9, specific item or place in box.	50	2.55	.01	14.00	12.20	9.76	11.67
20. Mother's verbal interaction, suggestion 10, directive, a specific solution which contains some descriptive information about item.	50	2.75	.008	5.70	6.37	3.35	5.05
21. Mother's verbal interaction, suggestion 11, directive, a specific solution without information.	50	2.87	.006	6.25	6.08	3.82	4.03

Table 24

Comparisons of Significant Differences on the Parent Child Interaction Measure Across Analyses

Item	ANOVA Pre, n = 84 Post, n = 26	Matched T Test n = 51	Repeated Measures ANOVA Age	Repeated Measures ANOVA Test	Repeated Measures ANOVA Interaction	Repeated Measures ANOVA Sex	Repeated Measures ANOVA Test	Repeated Measures ANOVA Interaction
1				*				
2	**				**			
3		**		**			**	
4	**		**					
5	*		**					
6			**					
7			**					
8	*	**	**	**		*	**	
9		*	*	*			*	
10	*	*	**	*			*	
11								
12		*		*				
13			**					
14								
15	**							
16			*					
17		**		**			*	
18								
19		**	**	**			*	
20		**	**	**		*	**	
21	**	**	**	**			**	
22								

* = Significant at the .05 level.

** = Significant at the .01 level.

Blank = NS

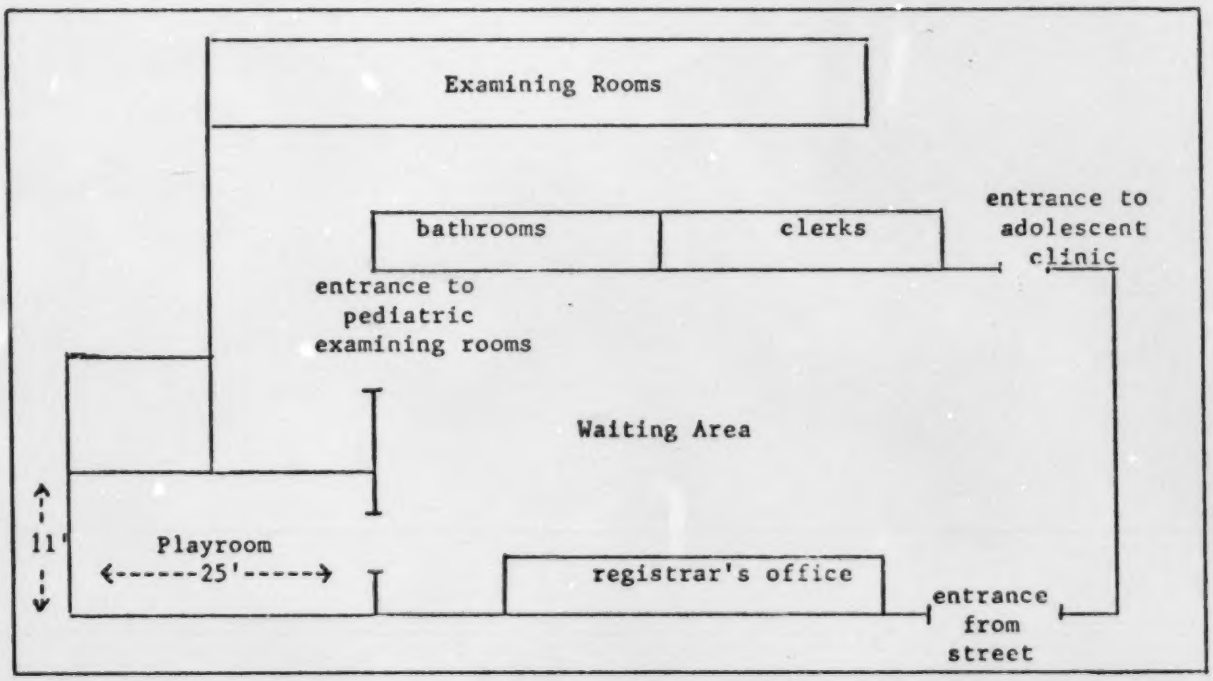
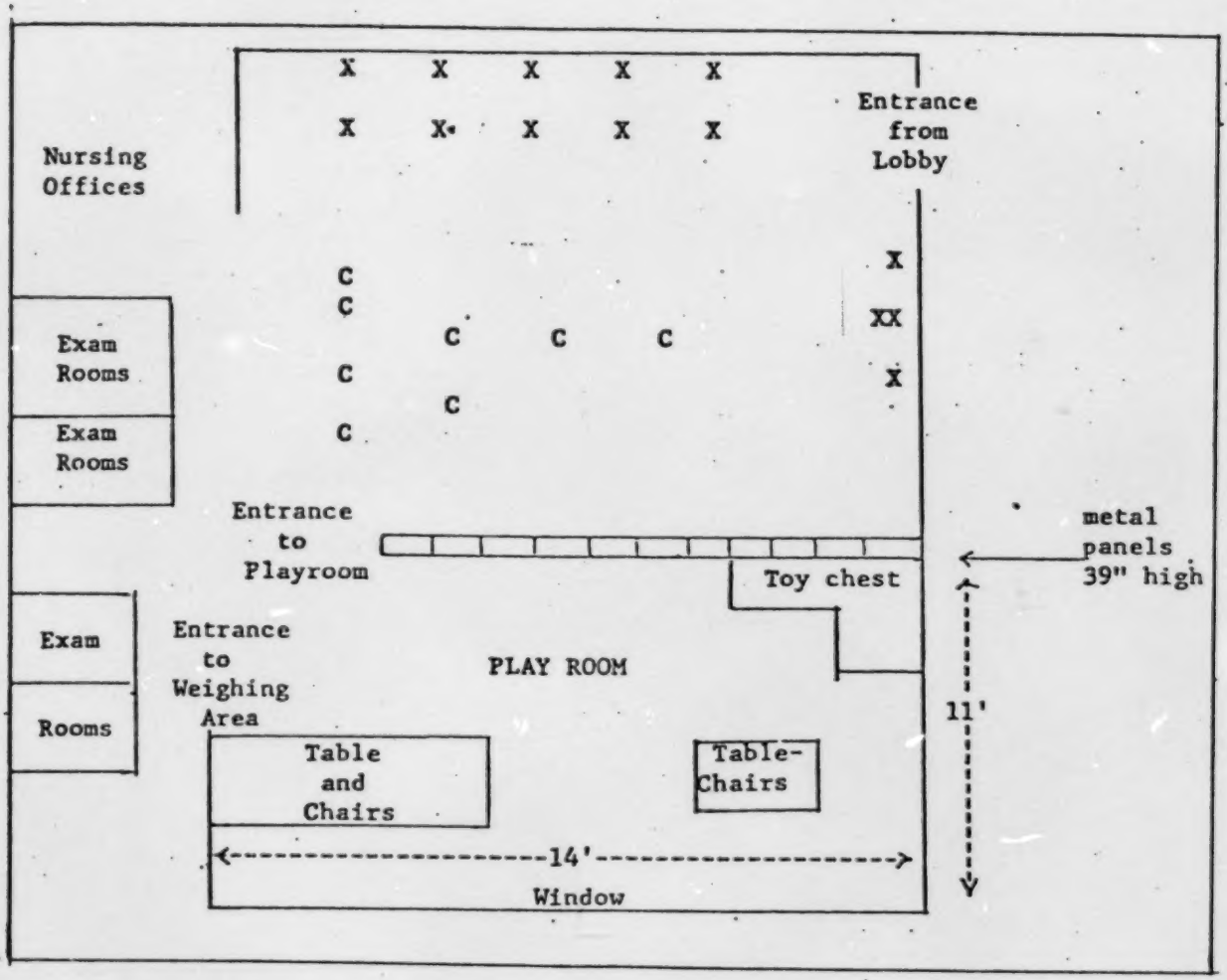


Figure 1. Separated playroom in a pediatric clinic.



Key: X - chairs for waiting parents

C - clerical areas

Figure 2. Open playroom in the waiting area of a well baby clinic.

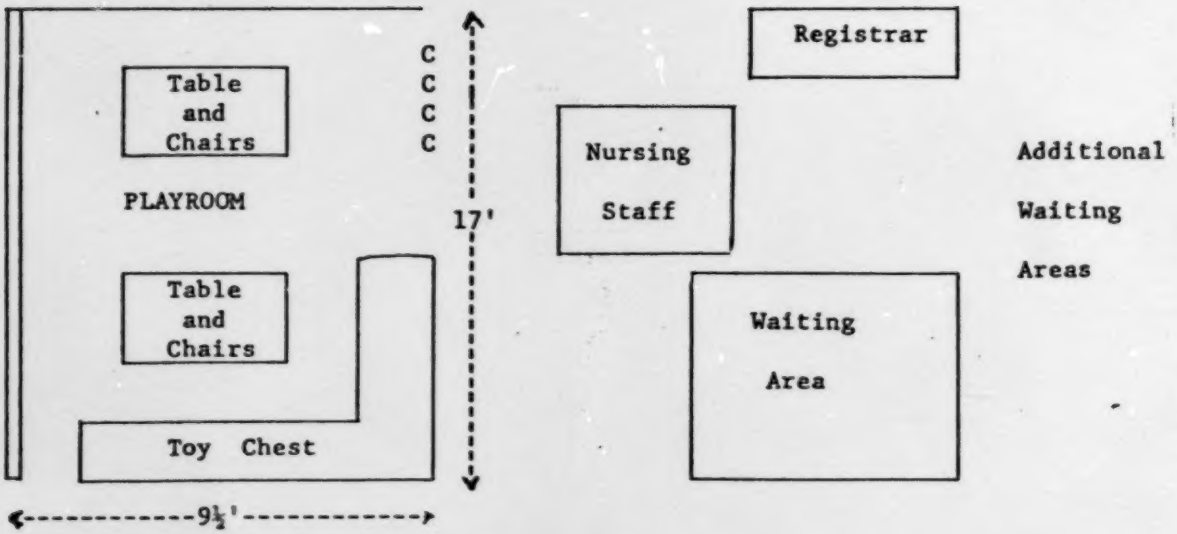


Figure 3. Open playroom in a prenatal clinic.